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THE  
DEPARTMENT OF WOODLOT MANAGEMENT  
MACDONALD COLLEGE  
AND  
THE MORGAN ARBORETUM ASSOCIATION



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Dr. W. H. Brittain entertaining Premiers J. R. Smallwood and W. A. C. Bennett  
at the time of the Centennial dedication of the Canada Birch Trail

ANNUAL REPORT  
to 31st May, 1968.

MACDONALD COLLEGE LIBRARY



MORGAN ARBORETUM ASSOCIATION  
AT MACDONALD COLLEGE, P.Q.

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President:	Dr. F. A. Harrison, Vice-President Woodlands, Canadian International Paper Company.
Vice-President:	Mr. T. R. Lee
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Dr. R. I. Brawn	Dr. Louis G. Johnson
Dr. W. H. Brittain	Mr. T. R. Lee
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Dean H. G. Dion	Mr. J. B. Morgan
Mr. S. H. Dobell	Mr. Robert Raynauld
Mr. John A. Fuller	Dr. H. Rocke Robertson, Principal
	Dr. G. H. Tomlinson

Staff — Department of Woodlot Management

W. H. Brittain, Ph.D. (Cornell), D.Sc. (U.B.C.), B.S.A., LL.D., F.A.I.C.,  
F.R.S.C., Scientific Adviser.  
A. R. C. Jones, B.Sc.F. (Tor.), M.Sc. (Syr.), Associate Professor and  
Chairman.  
J. D. MacArthur, B.Sc.F. (U.N.B.), Assistant Professor and Curator.  
J. R. Bider, B.Sc., M.Sc., Ph.D. (Montr.), Assistant Professor, Wildlife  
Biology (Huntly-Drummond Fund).  
Miss M. E. Munro-Kerr, Office Manager.  
Mrs. J. Lovell, Secretary (part-time).  
Miss J. A. Olive, Steno-Secretary (resigned 31.12.67).  
Miss A. Yates, Secretary.

Staff — Arboretum

R. J. Watson, Foreman.  
G. S. Martin, Technician.  
H. R. Brevoort, Technician (resigned 15.7.68)  
R. M. Irwin, Nursery Superintendent (to Ontario Forest Technical School  
31.1.68).  
R. Magill, Technician (to New Brunswick Forest Ranger School 31.1.68).  
Bradley Ross, Woodsman.  
Gene Goundrey, Forest Technician (to Paul Smith's College 31.1.68).  
Philip Moore, Technician (November 1967 — April 1968).  
Alan Stewart, Woodsman (November 1967 — April 1968).



## THE DEPARTMENT OF WOODLOT MANAGEMENT MACDONALD COLLEGE

It is a pleasure to present some of the highlights of the year's (1st June 1967 to 31st May 1968) activities to the membership.

### *Membership*

At the end of the year, contributions in the form of memberships to the maintenance of the Arboretum and the expansion of its educational and scientific programmes stood at 843 individuals and families, 40 corporations and associations, 20 honorary members, with a total of 113 new members in all categories. This growth has been most gratifying considering the current economic conditions and the very tight money situation in Canada. The continued interest in the Arboretum and its programme by private citizens and corporations is greatly appreciated. This year we have requested the membership to give us their views and ideas on current events in the area. The replies received have been helpful in providing us with some direction as to future programme, and have, on the whole, been most complimentary.

In particular, the efforts of President Fred Harrison, on behalf of the Association, have been outstanding. A financial campaign aimed at close to 300 corporations in the Montreal area that should be interested in supporting the work of the Association was directed by Mr. Harrison in April. This involved a great deal of correspondence and personal contact. Although this campaign did not result in a flood of company donations, it opened the door to future contacts and brought in several new corporation members as well as individual and family members. In addition to the vital necessity of obtaining more corporation support, Dr. Harrison has been active in many other ways in promoting the interests of the Association. Dr. Harrison and Dr. Vernon Johnson, the Honorary President, have made many contacts during the past year in an effort to gain financial assistance from several Foundations and corporations in acquiring a 360-acre forested property offered specifically to the Department and University by a long-time member of the Association. This property, located near Dalesville, contains some unique natural forest and water resources that could greatly improve the Department's existing facilities for study and training of students in the conservation of renewable resources. It is conservatively estimated that the annual operating expenses of this estate would be in the neighbourhood of \$25,000. As yet funds to finance this proposal of gift have not been found, but some promising headway has been made through the dedicated efforts of Vernon Johnson and Fred Harrison.

You will be pleased to learn that Fred Harrison's long and active work on behalf of forest protection and management has been rewarded by the granting of an honorary life membership in the Canadian Pulp and Paper Association at the annual luncheon of the Association held in Montreal during March of this year. The citation read, in part, as follows:—

"During his 45 years in the woodlands industry, Mr. Harrison has held many posts and received many honours. He joined the Canadian International Paper Company as a timber cruiser in 1926 and made his way up the ladder. In 1944 he was appointed Assistant Manager, Woodlands; in 1949, Manager of Woodlands, and



in 1957, Vice-President and Manager of Woodlands. He became a director of the company in 1965. Mr. Harrison is a past president of the Canadian Forestry Association and of Laval University Forest Research Foundation. He received an honorary forestry degree from the University in 1959. He was appointed chairman of the review committee of the executive board of C.P.P.A., was chairman of the Woodlands Section for two years, and served on the advisory panel of the Pulp and Paper Research Institute of Canada. Mr. Harrison has been especially interested in development of improved forest protection methods. He chaired the first five national forest fire research conferences held in various parts of Canada. He is recipient of the National Forest Conservation Award of the Canadian Forestry Association, and the Carling Quebec Conservation Trophy awarded by the Quebec Wildlife Federation."

The citation did not mention his prowess as a fisherman and curler, nor his well-known and still current ability to walk rings around most foresters and woodsmen who have tried to keep him in sight when travelling in the bush. This vigorous attitude to life has been maintained in his leadership of the Association over the last six years and long may it continue.

It is difficult, in a brief summary such as this, to mention all those who have given generously of their time to promote the aims and interest of the Association. However, I would like to thank Vice-President Tommy Lee for his concern for the Association and its programme and Robert Raynauld for his continuing interest and support. Mr. Raynauld's enthusiasm and hard work on behalf of forest conservation has recently been recognized by his reappointment as President, Canadian Forestry Association. The continuing interest of the Directors and the membership is also gratefully acknowledged.

There is an ever increasing demand for information on trees, diseases, insects and animal problems by letter and telephone, and this pressure is resulting in our attempting to restrict our replies to those who are members of the Association. This Spring, following an article in the Montreal Star outlining our studies for the protection of plastic tubing for sap collection from squirrel damage, we received several letters addressed variously to "Officer Commanding, The Battle of the Squirrels" and "The Squirrel Management Department".

It is with sincere regret that we advise the membership of the passing of some old friends and long-time supporters of the Association. Colonel Garnet Strong died in January, he was a very active and interested Director of the Association since its inception in 1952. He was made an Honorary Director in 1962 when, for health reasons, he was forced to decline re-election. He was always a most interested and enthusiastic supporter of the purposes and objectives of the Association. Mr. Russell G. Barrett, Mrs. W. Taylor-Bailey, Mrs. H. F. C. Stikeman, Mr. Eldridge Cate and Mr. R. H. Mather passed away during the year — their interest in the affairs of the Association will be missed.

A donation to the Arboretum in memory of Mr. Percy Cole, an early McGill graduate, from Mr. & Mrs. John Edward, Mr. & Mrs. James Ogilvy and Mr. & Mrs. Jack Cole is gratefully acknowledged.



### Staff

Staff changes this year saw the departure of Miss J. Olive to the Canadian Institute of Forestry. We were sorry to lose her, but are glad to see her still working in forestry and still on campus. Miss Antonia Yates, a temporary visitor from the United Kingdom has filled in admirably, but unfortunately plans to continue her travels across Canada, so we will only have her competent services for another few weeks. Miss Munro-Kerr continues to handle the demanding job of Office Manager with ability and despatch. She was absent for seven weeks this spring for an operation and convalescence. I am pleased to report that she is now back at work and recuperating fast. During Mary's absence we were fortunate in being able to obtain the services of Mrs. Jean Lovell, a local resident and long-time member of the Association. Mrs. Lovell was a great asset during this time and throughout the plant sale which is always a difficult period. She will continue to be available on a part-time basis on behalf of the Association.

The relatively sudden popularity of our outdoor educational programme of sugaring demonstrations, then nature conservation tours, has put terrific pressure on the office staff during this period. I am pleased to report that the staff took this in their stride, and thanks to their organization, these tours were arranged with the minimum of time and trouble, and to the satisfaction of students and teachers participating.

Dr. Brittain was honoured last fall by the awarding of a Centennial Medal for a lifetime of service to agriculture in Canada.

He is continuing his *Betula* studies aided by a National Research Council grant. He spent most of August on Grand Manan in the Bay of Fundy in an effort to sort out the confused state of the birches in that area. He was dogged by very wet weather and almost constant sea fog, so that the maturing of birch seed was late and made extensive collections very difficult.

Dr. Brittain also played a leading part in the official dedication of the Canada Birch Trail when all but two of the Provincial Premiers planted birch trees from their respective Provinces. Premiers Smallwood, Campbell, Stanfield, Robichaud, Robarts, Roblin, Manning and Bennett all planted birches, and the Governor General planted a red maple symbolizing Canadian unity. Dean George Dion, a Saskatchewan native son, capably filled in for Premier Ross Thatcher who was engaged in a Provincial election. Mrs. Daniel Johnson graciously performed the honours for her husband, recuperating in Hawaii from an illness. This was the final step in completing the Arboretum's centennial project — a planted avenue of birches representative of each territory and province of Canada (see pages 11 - 12 and map, 1967 Annual Report). Vernon Johnson, Honorary President, and Dr. Brittain made statements at this impressive planting ceremony held on McGill campus.

Vernon Johnson was introduced by the Principal and spoke as follows:—

"Mr. Chancellor, Mr. Vice-Chancellor, Distinguished Guests.

Members of the pulp and paper industry and others have long been interested in McGill's service to our industry. One way this interest has been shown in a tangible way is through support of the Morgan Arboretum Association and the work at Macdonald College. The Association, the brainchild of Dr. William Harold



Brittain, early began preaching the doctrine of the managed woodlot as a source of income and the need to develop public outdoor educational programmes. Since these early beginnings, industry and government have been quick to realize the great value of the forest as a polyvalent resource and the even greater need to educate people to use it wisely and well.

The Morgan Arboretum Association is continuing to receive our whole-hearted support and we are pleased with the emphasis being placed on effective management of resources and the effort to foster a greater awareness of the need for proper utilization of all the renewable natural resources of forest, wildlife, soil and water, including outdoor recreation. It is now realized that there are many economic benefits both to the individual and to the nation accruing from multiple use practices on private lands.

The Canada Birch Trail is only one of many land use projects that the Association has helped to stimulate and support. But it perhaps best represents the imaginative and public-spirited interest of the Association in assisting with the training of individuals directly concerned with the wise use of Canada's renewable natural resources."

Dr. Brittain was then asked to make the statement that follows.—

"Six years ago the decision was made to undertake at the Morgan Arboretum a centennial project based upon a characteristic Canadian tree — one that in itself would best express the significance of this great occasion — a tree of outstanding appearance, embracing in its distributions the widespread boundaries of Canada, and finally a tree associated in some meaningful way with the history and development of what is now Canada.

Fortunately, all three elements are combined in the familiar white birch tree, which lines roadsides, lakes and streams throughout the length and breadth of the land, or to quote the words of the blazon on the national coat-of-arms, "A mari usque ad mari".

Historically, it is linked with one of the most significant and romantic eras in our national development — the era of the fur traders and the voyageurs, whose activities played such a vital role in shaping our country within its present boundaries. The famous voyageur trail through the heartland of Canada was the homeland of the white birch, whose shining coat, in the form of the light bark canoe, was the basis for an amazing system of inland water transport, permitting communications between all parts of this vast domain.

It is true that the canoe played but a minor, though not an entirely negligible, part in our development of this project, but the task did involve journeys over thousands of miles of woodlands, prairies, tundras and mountains in order to collect the seed, which, when planted and grown to seedling size was finally established in the form of an avenue of trees forming "The Canada Birch Trail" representing every province and territory in Canada from Port aux Basques, Newfoundland, in the east, to Victoria, British Columbia, in the far west and Reindeer Station in the far north.

Today, you are not here to participate in a simple tree planting ceremony — that occupational hazard of all men in public life — but to assist in the symbolic dedication of this unique trail on be-



half of the people of your province — a trail which may be taken to reflect alike the unity and the diversity of our country.

Finally, I would like to feel that this dedication carries with it a charge upon our successors to maintain it in full health and vigour for the next centennial of a united Canada."

Dr. Brittain has published two more papers on *Betula*, in co-operation with Dr. Grant, and his National Research Council grant has been renewed for a second year. Dr. Grant's Extra Mural Research grant from the Department of Forestry and Rural Development has also been renewed to continue the cytological studies based on Dr. Brittain's birch material. A gratifying indication of the recognition this work is being shown.

Professor Dan MacArthur continued to wear three hats this year, holding down the demanding job of Curator of the Arboretum, teaching and advising students as an Assistant Professor of Woodlot Management and acting as woodlands' editor of the *Pulp and Paper Magazine* of Canada. In addition to these many duties, he found time to direct the maple research field trials in the Arboretum which were practically automated this year with the addition of a diesel generator and another vacuum sap pump, continued his Canada Department of Agriculture research grant on the study of maple silviculture, organized the plant sale, field days and sugar parties throughout the year. He also successfully supervised the supply of wood for the Wickheim Timber Shows at La Ronde, participated in numerous broadcasts — both radio and television — on maple, woodlot and reforestation subjects to Quebec farmers through the Extension Department's studio. He also addressed four high school career nights on "Forestry as a Career", gave an address on trees to the Lake of Two Mountains Garden Club, organized and trained the guides for the successful sugar demonstration tours in the spring and the nature conservation tours which followed them. He has published many articles during the year, and edited several more in both french and english. The articles are listed under "Publications" in this report. Professor MacArthur, in addition to reporting on the joint Canadian Institute of Forestry — Society of American Foresters Annual Meeting held in Ottawa, had time to present a paper entitled "The Uncertain Woodlot — a Bio-Socio-Economic Problem" in the Forest Management Forum. He has also attended professional conferences and scientific meetings during the year, among them the Laval University Forestry students "La Semaine des Sciences Forestières", Quebec, the Woodlands Section, Canadian Pulp and Paper Association logging mechanization field meeting at Chicoutimi, the C.P.P.A. "Forest Fire Seminar" and the Woodlands Section C.P.P.A. Annual Meeting in Montreal. Dan also took the Ontario Professional Foresters short course on "Herbicides in Forest Management" in Toronto during the winter. He is the current chairman, Champlain Section, Canadian Institute of Forestry, and has organized three thought-provoking forestry oriented meetings at East Angus and in the Montreal area. This includes the forthcoming June annual meeting to be held in the Laurentians, the theme "Forestry in the Recreation Environment".

Dr. Roger Bider, completing his third year in the Department, has been kept very busy with course work, in addition to supervising the research of seven graduate students. Despite this heavy academic load, he has been active in many other areas as well as preparing several



scientific papers for publication as listed in this report. The courses in Wildlife Biology and Ecology and Conservation, supported by the Huntly-Drummond Fund, continued to attract a wide diversity of interested students. In the fall, the laboratory periods for the wildlife course were held for a week in the Laurentians in advance of the lectures in order to concentrate on the field work during a time at which animal activity was high and collecting and observational techniques are most practical.

Dr. Bider participated in two papers given at the Ottawa annual meeting of the Canadian Society of Fisheries and Wildlife Biologists. One of these was given by Paul Thibeault on his M.Sc. studies, under the direction of Dr. Bider, entitled "The effect of a stream habitat on animal activity". Dr. Bider also presented a paper entitled "Communications problems related to bilingualism" in the panel discussion on "Communications in Resource Management". He also attended the Quebec Wildlife Federation Meetings in Quebec and the North American Wildlife Conference in Houston, Texas, this spring. He has given popular lectures on wildlife management to the Montreal Anglers and Hunters Inc. on two occasions and one in french to L'Association de Chasse et de Pêche de la Mauricie, Inc. He has been elected secretary of the Quebec Chapter of the Canadian Wildlife Biologists, Director for the Montreal Region of the Quebec Wildlife Federation and a member of its executive committee. He is also 2nd Vice-President of the Montreal Anglers and Hunters, Inc. He has been conducting two research projects in the Arboretum — studies of rodent damage on maple sap tubing and a survey of turtle growth in Stoneycroft pond adjoining the Arboretum. He also spent some time in the field and assisting with the report made by Dr. Pimlott in his research contract with Le Ministère du Tourisme, de la Chasse et de la Pêche on the decline of deer in the counties north of Montreal. In addition to these important projects, he is in continual demand for consultation with students and other visitors. He is constantly on the telephone answering queries related to wildlife, which includes such diverse matters as local sheep predation, what to do with captured racoons, squirrels, skunks, half-dead to dead birds and mammals. He was also on the look-out for a temporary home for the Ethiopian lion cubs, David and Bess. These beautiful animals are now out west properly housed in Al Oeming's unique Edmonton zoo.

The undersigned, in addition to administrative duties, prepared a paper and attended the XIVth International Union of Forest Research Organizations (I.U.F.R.O.) Congress in Munich, West Germany, in September. A paper entitled "A Practical Approach to Private Forestry in Canada" was presented and published in the Proceedings of the Congress in the Forest Economics and Policy Section. Over 700 forest scientists attended this triennial congress and the papers submitted were bound into nine volumes that totalled 5 kilograms in weight! The paper described three silvicultural approaches being used as demonstrations in the Arboretum for different private forest owners classed by income, and the need for foresters to develop a similar silvicultural philosophy when considering intensive private forest management in a Canadian context.

Following the congress, he participated in an 8-day general forestry excursion which took in the major forestry, cultural and historical aspects of the Federal Republic. Some of the highlights of this tour were outlined in an article published in the December issue of the Macdonald



Farm Journal entitled "A Visit to the Cradle of Forestry". This article has been circulated to the membership. Following the conclusion of Excursion C-17, brief visits to study the status of private forestry in the Nordic countries were undertaken (for a report on these visits see "*Tour of Nordic Forests*").

The undersigned was also occupied in organizing and lecturing to the adult evening course "Woodlot Conservation" held last fall at Macdonald College. He attended the usual committee, Department and staff meetings, such as the Gault Estate Committee, the C.I.F. National Finance Committee and Provincial Council Executive Committee sessions to name a few. Three lectures were given on the teaching of conservation to student teachers in the Faculty of Education. He presented an illustrated talk on "A Practical Approach to Private Forestry" to the Southern Ontario Section, Canadian Institute of Forestry in Toronto in November. He participated in and helped to organize C.B.C.'s "Country Calendar" programme based on Morgan Arboretum's methods of woodlot management, shown on 21st April. An introductory course in conservation was given to Pack Scouters in the Arboretum, Dr. Vickery followed up with a similar course for Venturer Scouters in the early spring.

A number of professional meetings were attended, among these were the annual meetings of the Corporations des Ingénieurs Forestières in Quebec, the C.P.P.A. in Montreal, the Quebec Forestry Association in Quebec, the Canadian Forestry Association in Ottawa, the Laval University Forest Research Foundation in Quebec, the Canadian Tree Farmers' Association which included several Directors' meetings in Ottawa, and the joint C.I.F. — S.A.F. meeting in Ottawa. A meeting of maple producers was organized, in co-operation with the Southwestern Quebec Protestant Settlement Society, in Franklin Centre during March. Over 70 producers attended this discussion and seminar on "What's new in the Maple Industry". Considerable time was spent editing a paper on the Department's research on woodlot owner attitudes, conducted in Soulanges and Huntingdon counties. This work is to be published in co-operation with the Forest Economics Research Institute, Department of Forestry and Rural Development, Ottawa.

The Department was also fortunate in having a visit from Dr. William Duerr and his family last June. Dr. Duerr spent several days in the Arboretum examining our silvicultural economic demonstrations, and his advice and comments on this work were most helpful. He also visited the C.I.P. Harrington Forest Farm. I also travelled with Dr. Duerr to Quebec at a later date, visited the Deputy Minister of Lands and Forests, Mr. Boutin, and his colleagues in the Economics and Planning Division of the Department. This contact with the Chairman, Department of Forestry Economics, New York State College of Forestry, has been most helpful to the development of our programme and we look forward with pleasure to its continuance.

Foreman Bob Watson has been occupied this year with the many activities involved in maintaining the Arboretum's facilities in good condition, carrying on the numerous research projects, supervising the upkeep of nurseries, Expo wood supply and deliveries, tree sales and other products, gatekeeping, wood cutting, sugaring tours and protecting the property from vandalism, theft, litter and trespass. This year, several innovations in the form of rustic benches and litter disposal



units have been put out to keep the area attractive to the increasing number of members using the Arboretum for outdoor recreation purposes. Bob continued his coaching activities with the Macdonald Woodsmen team, and they returned from Fredericton last fall as inter-collegiate champions. During the Winter Carnival competitions, Paul Smith's College team won out by a narrow margin over the Macdonald teams which took second and third positions in a 10-team event.

Bob Watson also handles the responsibility of gatekeeping, and his records show a continued increase in numbers entering the Arboretum during week-ends from June 1967 to the end of May. The records are as follows:—

1962-63.....	1,458
1963-64.....	3,434
1964-65.....	4,344
1965-66.....	—
1966-67.....	4,738
1967-68.....	5,037

Expenses totalled \$453, with receipts from .50¢ passes amounting to \$315.

These numbers do not include the many educational groups that have visited during the week. Over 6,000 school children have been introduced to conservation in the area, in addition to those who have registered at the gate. Income from these tours has covered expenses.

The other members of the Arboretum permanent work crew, Galen Martin, Harold Brevoort, Bradley Ross and Alan Stewart, have made their presence felt through the year and their co-operation is much appreciated.

There was a mass exodus of three of our technical staff last January when Dick Irwin enrolled in the Ontario Forest Technical School at Dorset, Bob Magill went to the Maritime Forest Ranger School at Fredericton, and Gene Goundrey, a graduate of the Dorset School, commenced studies in forestry at Paul Smith's College. These three are returning to work with us this summer and will continue their studies in the fall. Phil Moore, a Macdonald Diploma graduate, filled in very capably as technician from November to mid-April and was most helpful through the labour-intensive sugaring period. Other temporary help on the staff at that time were Roy Wilson, Rowan Lalonde, Jim Freeman and Peter Dennison.

### *Arboretum Special Events*

#### *Fall Field Day*

A forestry demonstration and field day was held in early December and 40 to 50 members and students in the evening course participated. Demonstrations of recent work in sugar maple management and woodlot cutting tools' use, with the co-operation of the Homelite Chain Saw Division, Terry Machinery, took place. The assistance provided by this firm in keeping the Department's chain saws in order and up-to-date, is greatly appreciated.

#### *Canada Birch Trail and Betula Research*

The planting in the Canada Birch Trail is completed, and for the most part the trees appear to be flourishing. Considerable progress has been



made in the *Betula* research. Results of the survey of Grand Manan specimens has proceeded with the tabulation and analysis of results, the preparation of detailed drawings, illustrating technical details of each specimen collected, together with the relevant graphic illustration in the form of histograms, scatter diagrams and polygonal graphs, and finally a draft report of the whole project has been completed. There remains a number of points to be cleared up, including a determination of the chromosome constitution for a number of the specimens. All this work is aided by a grant from the National Research Council enabling us to employ three student assistants through the summer months. Two publications have come out during the year, and several more are in press. The special centennial project of the Arboretum culminated in the official dedication of the Premiers' Trail when a birch tree representative of each Province was planted by the respective Premiers at a ceremony following McGill Convocation in October 1967. The trees planted by the Premiers are to be established in a special location in the Arboretum in the spring of 1969 which will be called "The Premiers' Trail".

### *Educational Maple Tours*

Interest remained high in the educational maple sugar tours. During slightly over a month, guide Jim Freeman welcomed more than 2800 children at the miniature sugar bush and sugar house. The continuation of lecture, maple syrup book and maple taffy on snow continues to fascinate the young visitors. Gross returns to the Association reached \$1,400.00. Thus this activity not only provides an excellent conservation activity, but helps support the Association in its efforts to foster an interest in this important subject.

### *Nature Conservation Tours*

Interest in maple tours was the stimulus for the development of a series of bilingual Nature Conservation Tours during May and June. The following circular announced this offering to Lakeshore schools:—

"Guided two-hour nature walks will be available during school days for kindergarten and primary grades during May and early June.

Groups will be met at the Morgan Arboretum parking lot by a bilingual guide who will lead them on a walk through the woods to observe many species of trees, the spring flowers of the forest, flowering trees, planted and natural trees, possibly some birds and other animals, and many other interesting things in nature.

As a living souvenir of the "adventure" each child will receive a two-year old red pine tree in a peat pot. These trees may be planted, pot and all, and could be a start for a Cub or Brownie project. (Red pine is a good ornamental tree.)

These two-hour tours will be organized Monday to Friday during the next few weeks commencing at 9.30 a.m. and 10.00 a.m. and 1.00 p.m. and 1.30 p.m. To defray cost of guides, trees and organization, a charge of 25 cents per student will be made."

Response was most gratifying and some 2800 children were booked by May 15th. Fortunately, two bilingual guides, Ann Mackenzie and Sandy MacLeod, were available and interested in this kind of work.



Their enthusiasm was an important factor in making the operation a success.

Response to the maple and nature tours is evidence of an interest in, and need for, this kind of educational experience for curious young minds.

#### *Dr. D. H. Pimlott, Lecture and Visit*

In late February, Dr. Pimlott gave a lecture entitled "The Life of the Timber Wolf". Approximately 300 people attended this lecture and enjoyed Dr. Pimlott's excellent presentation. He gave background material on the life history of the wolf, along with many of his personal experiences which he has had during the course of rearing and studying wolves. Following his lecture, he proceeded to Labelle county to further his studies on the deer situation in Quebec. Professor Bider and Mr. Dick Passmore, Canadian Wildlife Federation, were associated consultants with him on this important Quebec deer survey.

#### *Dog Sled Race*

In early February some of the Arboretum trails were used for a trial dog sled race sponsored by the Laurentian Sled Dog Club. Seven teams participated in the races organized for both senior and junior racers. The event was held in the area on a trial basis in an attempt to find out if it was feasible to use the Arboretum for such purposes. The primary reasons for the Club holding these races, besides testing their skills as drivers, was to popularize the sport of dog sled racing. The fine weather and unusual nature of the race attracted a huge crowd which made the control of cars, people and loose dogs virtually impossible. If the event is repeated, a very much tighter organization will be required to eliminate these problems which marred a most interesting winter event.

#### *Plant Sales and Exchanges*

Members' plant sale. An unusually early spring in 1968 posed special problems for the members' plant sale. Preparations had to begin earlier than usual and the sale dates were set for a normal spring. Consequently, the delay between preparation and delivery of orders was unusually long. Despite these difficulties, results were satisfactory. Careful packing, plus the use of a respiration retardant, preserved the plants very well. Total returns were about \$1,800.00.

In addition to the annual members' sale, there were some special distributions of trees. Twenty-four species and twenty varieties of birch were sold to the New Brunswick Electric Power Commission for addition to the Beechwood New Brunswick Arboretum. Some special hardy varieties of birch were sent to the McGill Sub-Arctic Biological Laboratory at Schefferville, P.Q. One tree, a swamp white oak, was donated to the University of New Brunswick Campus Arboretum.

Seven specimens of *Ulmus* were received from Dr. René Pomerleau of the Canada Department of Forestry and Rural Development Forest Research Laboratory in Quebec City. These trees, exhibiting varying degrees of resistance to the Dutch Elm disease, are an interesting accession. They are:—



1. Number 202. (*Ulmus glabra* cu *exoniensis* x *U. wallachiana*) A hybrid made by Heybroek in Holland, 1 specimen.
2. L-235. The L'Assomption elm, a clone of *Ulmus americana*, 5 specimens.
3. 56L-115. A clone of *Ulmus americana* isolated at L'Assomption from irradiated seed, 1 specimen.

### *Tour of Nordic Forests*

Following an 8-day general forestry tour of West Germany, it was possible to briefly visit Denmark, Finland, Sweden and Norway and talk with some forest economists and private forest owners in each of these countries. It was a most rewarding experience.

*Denmark.* The visits began with two days spent in Denmark and discussions with Dr. Nils K. Hermansen, Professor of Forestry Economics, Royal Veterinary and Agricultural College, Copenhagen. Professor Hermansen explained that private forests in small and large ownerships occupy approximately 75 per cent of the forest land in Denmark, of which 70 per cent is broad-leaved forest. The main commercial species are beech, oak, fir and Norway spruce. The reclaiming of unproductive dune and heathland by afforestation are the important programmes in Danish forestry, with timber production, recreation, and protection from wind and sea fog of major concern. Forest fires are not a problem in Denmark, nor do they appear to be a hazard in the other Nordic countries. This may seem strange considering Canada's constant difficulty with fire in her forest domain. This is, in part, the result of a century and more of intensive forest management, much better access to their respective forests, higher summer rainfall (quite evident last September), populations well dispersed through the forest regions, and a well-founded and renowned reputation for forest conservation and protection. Dr. Hermansen described the changing land-use pattern in Denmark and the increased reforestation of marginal agricultural land. The best financial return in Danish forestry comes from the harvest of Christmas trees and evergreen boughs. Approximately 8 million trees are produced annually, half for the domestic market and half for export to Germany, Italy and Norway. The sale of boughs from fir and spruce yield the best return. Another profitable land use involves leases for hunting—commonly roe deer. The annual labour investment per hectare of forest land diminished from 60 to 20 hours in the last twenty years as a result of increased land productivity, mechanization, and a widespread trend to more extensive forest management. With Dr. Hermansen I visited the famous public deer park, the site of King Frederik's hunting palace on the outskirts of Copenhagen. This 2,400 acre beech forest and grassland area is the home for several hundred red and fallow deer which roam at will through the grounds, which includes a public golf course. All new tree plantings were carefully fenced. A fascinating example of multiple use on the outskirts of a large city. The visit with Dr. Hermansen provided an excellent opportunity to learn something of Danish forestry methods, and his hospitality was sincerely appreciated.

*Finland.* A 4-day visit to Finland commenced in Helsinki where Dr. Paivio Riihinen and his colleagues at the University had kindly arranged for our (Don Burton, Ontario Lands and Forests accompanied me on this visit) excellent accommodation. A full day was spent in the field on an interesting tour arranged and conducted by Dr. Mikko Kantola

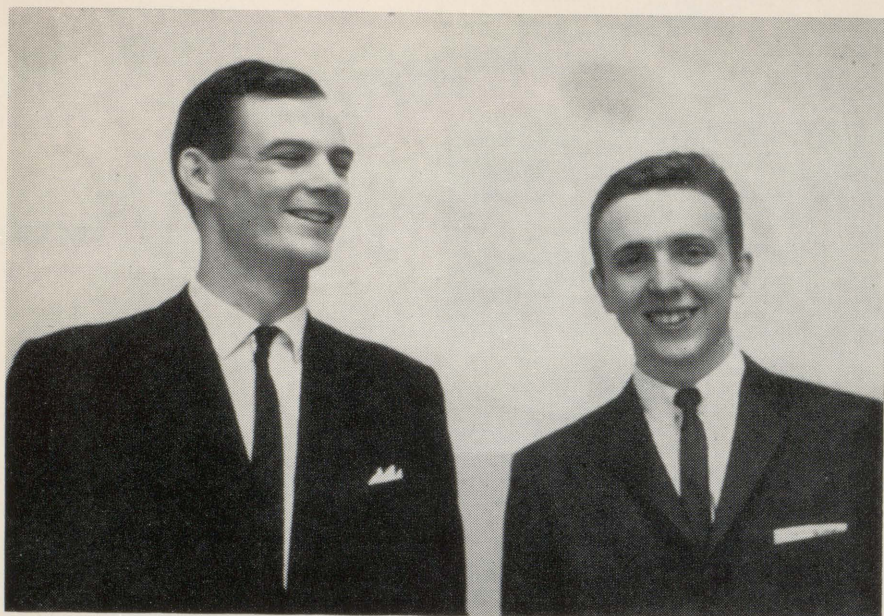


and Dr. Hahtola of the Work Efficiency Association. Finland's economy is largely based on her forests which, like the Scandinavian countries, are primarily coniferous spruce and pine. These forests constitute 86 per cent of the land area, of which about 22 per cent is of low productivity or treeless tundra. 63 per cent of the forest area is privately owned and most intensively managed. The Work Efficiency Association is mainly concerned with improvements and developments of logging mechanization efficiency and wood handling methods. The tour began in an area where sawlogs were being loaded and hauled to the mill by a Ferguson farm tractor and trailer ingeniously adapted for forestry work. A Valmet Ak special self-loading truck was also observed in action under the supervision of Mr. Paavo Haataja, Director of Field Studies. This was followed by a visit to the Rajamaki School for training forest foremen and to observe forest land cultivators and planting machines, all operating off standard farm tractors. Following lunch at the School, the Forest Tree Breeding Foundation and nursery was examined. The production of grafted Scots pine and spruce nursery stock has been vastly increased by the use of plastic greenhouses which have almost halved the time it takes to grow field-size planting stock. Forest discing operations to establish advance growth, prior to logging, were next observed, followed by a visit to a farm forest owner's drainage operation using a tractor mounted back hoe to improve his forest's productivity. The following day was spent in Helsinki in discussions with Mr. Veikko Palosuo and other members of the Central Forestry Association, Tapio and Messrs. Kantola, Levanto and Hahtola of the Work Efficiency Association. Finland has set some very demanding goals for improved forest production in her M.E.R.A. programme, and these were outlined by Tapio representatives. Forest improvements fall into fertilization projects, increased acreages planted or seeded, more forest drainage and the construction of more forest access roads. The M.E.R.A. plan aims at the production of 400 million seedlings per year by 1975, and with increased forest fertilization it is expected that 15 to 30 per cent more wood can be produced, if funds can be obtained to reach these goals. Land drainage is widely in vogue, even on marginal to treeless land, and some very practical and durable equipment has been developed for this task. The final day in Finland was spent with Professor Riihinen at the University of Helsinki discussing his work in the social economics of forestry and his studies of private forest owner attitudes. Since 75 to 80 per cent of the raw material needed by industry comes from Finnish private forests, this work is of major importance.

This was my first visit to Finland. The warm hospitality, the brief glimpses of a most attractive and somehow familiar landscape (to a Canadian), and the progressive attitude to forestry, all suggest that there is much more to learn here than can be accomplished in such a brief visit.

*Sweden.* Mr. Mats Danielson, National Federation of Swedish Forest Owners, acted as host for a short tour of private forestry operations in Sweden. Swedish forests hold a central position in the national economy, and a strong forest ownership association plays an essential role in the managing, marketing, manufacturing and export of forest products. 50 per cent of Sweden's forests are in private small ownerships, mostly farmers, with the remainder equally divided between state and company holdings. However, the bulk of private ownerships are in central and southern Sweden (amounting to 80 per cent in south Sweden), so that





Bill Cochran

Co-winners Vernon E. Johnson  
Woodlot Award

John Gibb



Private forestry near Oslo.



Arboretum birches at Orly Airport, France.





Premier Campbell  
P.E.I.



Premier Roberts  
Ontario

**TREE PLANTING CEREMONY**  
Centennial Project  
October, 1967



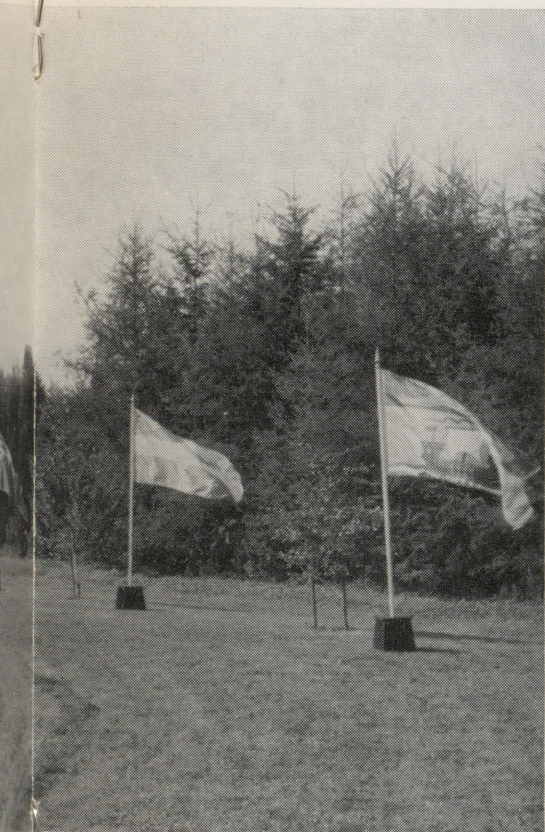
Canada Birch Trail  
Morgan Arboretum



# PLANTING CEREMONIES

Centennial Project

October, 1967



Canada Birch Trail  
Arboretum



Mrs. Daniel Johnson  
Quebec



The Honourable Mr. Stanfield  
Nova Scotia





Dogsled Races, Morgan Arboretum



Sugaring Demonstration



Edwards' sugarbush  
Covey Hill



this more productive privately owned land provides approximately 60 per cent of the nation's wood production.

Mr. Danielson arranged a visit to a private forest near Södertälje where, together with the owner, Mr. Broms and the local forest technician, Gunnar Åberg, we examined a recent cut-over and new road construction in Mr. Broms' 350-acre forest. This forest, plus 60 others in that area are all under joint management by Gunnar Åberg. The roads are surveyed, the forest is harvested, and products sold, with all the technical operations closely supervised by the forest technician who thus ensures that good forestry practices are carried out, the strict Swedish Forest Laws carefully observed, and the owner receives his financial share of the harvest. In this way the productivity of most private forests are maintained at a high level, and comprehensive and integrated planning is possible through each District Forestry Board. The ingenious use of farm tractors and logging trailers for woods operations were again noted during this field trip.

I also had an opportunity to visit the Royal College of Forestry in Stockholm and to meet with Professor Emeritus Thorsten Streiffert, Professor Stridsberg and Jan Engsäs of the Department of Forest Economics. Discussions with these gentlemen indicated that the early co-operative movement, supported by strong forestry legislation, forms the backbone of private forestry in Sweden. This has been responsible in part for the success of Swedish forestry and has resulted in some very high producing forest areas. Once again, I was received most hospitably and the brief field visit gave an appreciation of the efficient organization of their forestry endeavours.

*Norway.* The last stop in this whirlwind tour was Oslo where Mr. Hans Strand of the Department of Forestry, Agricultural College of Norway at Vollebekk, was my informative guide. Unlike Sweden and Finland, Norway has less than one quarter of her land area in productive forest, most of this forest is found in the eastern provinces composed primarily of Norway spruce, pine and birch. Nearly half the land area of Norway lies above tree line. Privately owned forests comprise almost 82 per cent of this area, with farm forests constituting nearly 60 per cent of the total. Mr. Strand arranged two visits to forest properties owned by members of the South Glommen Forest District. Mr. Trygnie Agnor, a farmer, obtains approximately one quarter of his income from wood production. His holdings — 10 acres arable land and 100 acres woodlot — were fairly representative of the land distribution on Norwegian farms. Mr. Agnor had done a good deal of reforestation following cutting, and had also experimented with some drainage and fertilization work. Mr. Lief Ström, near Åneby, the chairman of the District Forestry board, was managing some high quality, mature Norway spruce stands which he was gradually harvesting by clear-cutting, followed by reforestation. He had also carried out some pulpwood and fuelwood thinning cuts in some forty year old stands. He and his farm help did all their own logging and hauling with a farm tractor adapted for this work. Both owners had detailed forest management plans and it was noted that these plans were in constant use. Mr. Ström's daughter was a forest technician and had made his management plan.

Discussions were also held in Oslo with directors of the District Forest Owners' Associations, Mr. Von Krog and Mr. Arne Solbraa. These Associations are efficiently organized and maintain constant contact, through



their local representatives, with the individual forest owners. Following these field trips, the Lovenskiold sawmill on the outskirts of Oslo was visited. Mr. Wesche and Mr. Bjerkhoel Nielsen acted as guides for this tour of one of Norway's most modern sawmills operating on wood produced from the company's large private forests within sight of Oslo. The tours were smoothly organized by several organizations, and the generous treatment and hospitality of the forest owners themselves, and Mr. Strand in particular, were very much appreciated.

#### *Vernon E. Johnson Woodlot Award*

This award was commenced in 1960 with the idea of transposing to rural areas the forestry practices learned at Macdonald College. It is named after the first President of the Morgan Arboretum Association — Dr. Vernon E. Johnson, former president of the Canadian International Paper Co., who has a keen and continuing interest in better management of the farm woodlot. This award, a cash amount, is judged on work performed in the home woodlot. This year there were two winners, Mr. Bill Cochrane and Mr. John Gibb.

Bill Cochrane of Portage de la Nation, the co-winner of this year's award, thinned a young maple stand to improve the sap production potential of his sugar-bush.

John Gibb of St. Paul d'Abbotsford thinned an acre of grey birch, soft maple and elm to release an underplanting of spruce and red pine. These trees had been planted by his father some years before to add to an existing plantation of red, jack and white pine, Norway and white spruce in several areas.

The awards were presented at the Diploma Graduation Banquet on 29th March 1968.

#### *Canadian Tree Farmers' Association*

During several Directors' meetings, and at the annual meeting of the above organization in April, plans were laid to prepare and submit a brief on the "Major difficulties of Private Forest Management in Canada" to the House of Commons Committee on Agriculture, Forestry and Rural Development. Requests for specific suggestions, comments and additional information based on personal knowledge and local experience were sent out by the undersigned to all members and former members of the Canadian Tree Farmers' Association, to interested forest industry representatives, and to others knowledgeable in this matter. Some extremely interesting information has been received and this will form the basis for the brief which it is hoped can be formulated over the summer. The co-operation of the many individuals and organizations who have presented their comments and suggestions for this draft are very much appreciated.

Following the Annual Meeting, which was addressed by Dr. André Saumier, Assistant Deputy Minister of Rural Development, a presentation was made to Mr. & Mrs. J. A. Macdonald in recognition of their devoted service to the Association since its inception in 1957. Mr. Macdonald acted as Secretary-Treasurer until December 1967, resigning for reasons of health.

Mr. Herbert Herridge has agreed to carry on as President of the Association. He will be residing in Nakusp, B.C. He expects to obtain the



services of a new Secretary-Treasurer among the Faculty of Forestry at Selkirk College. In the meantime, Mr. G. Alec Kingston of Ottawa is acting as Secretary-Treasurer.

### *Woodlot Research*

Part of woodlot research is mentioned under the maple programme. Improvement cutting in maple groves would come under the institutional category of harvesting. In addition to this, the demonstration of marginal category harvesting was enlarged by cutting another strip clear in the pioneer forest type. A strip clear-cut in 1961-62, the first to be so treated, which was in 1967 occupied by a dense stand of saplings, was used for an experiment in mechanical thinning. During the winter of 1967-68, eleven 6-foot wide strips across the clear cut were cut out to open up the stand. Another eleven such strips will be cut out in July 1968. These winter and summer thinnings have been allocated to permit comparison with unthinned sections.

### *Wood Production*

Improvement cutting took place in the following three areas during the year:—

- Block XI .. Sugar bush improvement
- Block XVI .. Sugar bush improvement
- Block XIV .. Clear-cut strip

There was also cutting of basswood through the Arboretum woods to obtain wood for Expo. This was also improvement cutting in that the trees harvested were of inferior quality in normal markets.

#### *Production:—*

Hardwood firewood .....	130 cords
Grey birch firewood .....	12 cords
Sugar wood .....	25 cords
Pulpwood .....	60 cords
Wood for Expo .....	48 cords

Production of firewood was low because: — 1) demands of Expo wood cutting, and 2) the extra care required in sugar bush improvement.

While the Expo contract to supply chopping and sawing blocks for the Timber Show absorbed wood cutting efforts, it proved to be highly rewarding. Removal of low quality basswood resulted in much stand improvement, and net profit was of the order of \$4,000.00 To this may be added returns from about 50 cords of pulpwood — a by-product of the Expo project.

### *Maple Research*

The 1968 maple syrup season was compressed into a very short period. There was no early March sap flow and warm weather began early in April. Production was average or slightly lower and this was a general experience. Production data indicate this.



<i>Year</i>	<i>Production data — 1959 to 1968</i>		<i>Sugar/tap-lbs.<sub>1</sub></i>
	<i>No. of taps</i>	<i>Gals. of syrup</i>	
1959	2,692	278.5	0.93
1960	2,488	427.5	1.58
1961	2,605	281.0	0.99
1962	2,626	(150 P/L) 309.0	1.08
1963	2,871	(480 P/L) 371.0	1.19
1964	2,793	(911 P/L) 353.5	1.14
1965	2,850	(932 P/L) 250.5	0.81
1966	2,818	(728 P/L) 512.0	1.67
1967	3,230	(930 P/L) 472.0	1.34
1968	3,230	(1430 P/L) 370.0	1.15
10-year average to 1968		363.0	

<sub>1</sub>Gallons of syrup times 9.2 divided by number of taps.

The number of taps in 1968 was about the same as in 1967, but some 500 more were put on tubing. This new system, complete with vacuum pump, was installed just before the 1968 season began. Another innovation was the use of a portable diesel driven electrical generator and electric motors to run the vacuum pumps. Electricity was also available in the sugar house. Despite the loss of one electric motor, which burned out mysteriously, electricity proved a great improvement once the installation difficulties were overcome.

In the North Grove, yields of sap from two systems were compared. In a comparison of 18-inch and 6-inch drops, results seemed to be about the same. However, the data will serve only as a starting point for further work to determine what minimum drop length may be used.

Also in the North Grove, a fairly elaborate set of tests of squirrel repellent measures was superimposed on the foregoing. Hopes for interesting results were dashed by non-co-operation on the part of the squirrels. In 1968 they did not attack tubing to any significant degree. Considerable effort was wasted.

In the four 60-tree test groves, 240 trees and 480 taps were used in comparisons of gravity flow sap yields from three different tubing arrangements. These were:—

1. Mapleflo, 18-inch drop.
2. Natural flow, 18-inch drop, unvented.
3. Natural flow, 18-inch drop, vented.

The experiment consisted of 12 paired replicates of 1. and 2. above, and 12 more of 1. and 3. There was no direct comparison between 2. and 3.

Results were not significantly different and this was particularly surprising since work has been reported in which yields from unvented tubing were much superior to those from vented.\* There were differences between the two experiments and they took place in different seasons with 1968 being quite unusual. Accordingly, the interesting vent question will probably require more study to obtain conclusive results.

Work on maple grove management and improvement continued. The maple grove potential was enlarged by improvement cutting to stimulate

\*BLUM, Barton M. 1967. Plastic tubing for collecting maple sap. A comparison of vented and unvented installations. U.S. Forest Service Research Paper NE-90.



young sugar maples in the East, Centre, and North groves. This work produced basswood for Expo, hardwood firewood, sugar wood, and pulpwood. Removal of decadent trees may also have brought the number of den trees closer to normal, with a reduction in the squirrel overpopulation.

Work on a long term experiment in intensive management of sugar maple for sugar production continued. Over 1000 young maples were measured and mapped and IBM cards were prepared for each tree. From these trees will be selected the much smaller number that will eventually make up the grove. Selection will be in stages, a series of approximations, as the stand develops.

Support for work on maple management has increased and it is a pleasure to acknowledge assistance from tubing manufacturers. Both Mapleflo and Naturalflow tubing and accessories were donated for use in research on sap collection.

Research grants were obtained in support of work on maple management and on sap collection. The former is supported by a Canada Department of Agriculture grant, initially in 1967 and renewed in 1968, and the latter by a Quebec Department of Agriculture and Colonization grant beginning in 1968.

During the year the Department has been involved in a number of consultations with other maple researchers. Professor James Marvin and Mr. Fred Laing of the University of Vermont visited Macdonald College to discuss research problems with representatives of 3M and our staff. It is also a pleasure to report that several discussions took place with Mr. Jean Guilbault, Chief of the Maple Division of the Quebec Department of Agriculture, regarding research and development problems in Quebec.

### *Nursery and Plantations*

Supplies of ornamental trees and shrubs that have proved hardy in the local habitat were maintained in the nursery for plant sale distribution. Some new potentially good varieties were acquired for testing and the work with native shrub promotion was continued. This work is not spectacular, being in the main observation of climatic effects over a number of years.

Handling the specially valuable birch material and disposing of surplus birch material has engaged the nursery staff. Planting the living collection of birch varieties, and especially hybrid and chromosome specimens, has been a demanding task that is now coming to a successful completion. This unique collection will call for special cultivation and protection for some years.

Christmas tree plantations are receiving cultural treatment — shearing and pruning — annually and some of this expense has been defrayed by sales of Scots pine Christmas trees. The Scots pine Christmas tree seed orchards (grafted clones from Mark Holst) have developed well. Unfortunately, during the winter some of the grafts were girdled by voles and will be lost. The 1967-68 winter was not climatically damaging to trees, but damage by girdling was particularly heavy. Fortunately, most of the ornamentals were protected by Arasan, but some unfortunate losses did occur.



### Plantation Management

Efforts continued to maximize early returns from conifer plantations through sale of Christmas trees and pine boughs for Christmas decorations. The small plantations of Scots pine destined for Christmas trees were sheared and sales from these stands increased. Spruce plantations were thinned for Christmas trees, and spruce sales increased about 28% over 1966. The ratio of spruce to pine sales was 1 to 3 in 1967.

Sheared and unsheared Scots pine sold equally well, and this result, plus sales of spruce, justifies the efforts to diversify the sale to some extent. Experience with pine bough sales indicates that most, or all, species of pine can be sold in this way. The opportunity to prune and thin pine plantations that results is most welcome.

Birch firewood was in short supply in 1967, but a good stock has been laid in for 1968. Maple syrup was again offered with good results.

Total Christmas sale receipts were \$4,738.00 distributed as follows:—

Item	Number	Revenues
Christmas trees		
Scots pine — sheared	343) 753	\$2,909.50
— unsheared	410)	
Spruce	239	752.00
Fir	1	4.00
		<hr/>
		\$3,665.50
Pine boughs	546 bundles	546.00
Firewood	17½ bundles	17.50
		<hr/>
		\$4,229.00
Maple syrup	64 gallons	509.00
		<hr/>
		\$4,738.00

In hardwood plantations some profitable thinning has been possible through sales of surplus trees for ornamental use to golf clubs, municipalities, etc. Total sales amounted to \$3,308.00.

### Wildlife Teaching — Huntly-Drummond Fund

Wildlife biology in the Department has been gaining momentum since its inception three years ago. The Wildlife Biology (Zoo-400) class included ten undergraduates and four graduate students. This year a six day field laboratory was introduced into the course. This laboratory took place at Lac Carré, preceding the September registration. Seven students participated in the Ecology and Conservation (Bio-400B) course, and twenty in the Comparative Morphology (Bio-431) courses given by Professor Bider.

Five fourth year projects (Bio 490) were undertaken in the area of wildlife biology. G. Weary — "Ecology of Snake Populations". J. Bovell — "Activity Responses of the Toad, *Bufo americanus*". R. S. Gibbon — "Residual D.D.T. in Relation to a Population of Yellow Bellied Sapsuckers, *Sphyrapicus varius*, in New Brunswick". O. Godfrey — "The Effect of Different Sized Grids in the Trapping of *Microtus pennsylvan-*



*nica*". André Bariteau — "Etudes des Effets des Sels Minéraux sur les Habitudes des Orignaux — *Alces americana*".

One M.Sc. thesis on the influence of a stream on the activity of an animal community is being submitted by Mr. P. Thibeault for fall convocation. Four M.Sc. students are in their second year — Mr. Y. Côté, ecology of a stream population of trout, *Salvelinus fontinalis* — Mr. L. Pellerin, the ecology of the jumping mouse, *Napaeozapus insignis* — Mr. D. Vernier, the ecology of the hare, *Lepus americanus* — Mr. R. Sarrazin, evaluation of the shrew, *Sorex cinereus*, in the biological control of the larch sawfly, *Pristiphora erichsonii* (Htg.) in Newfoundland. Two new M.Sc. students are starting their work this summer, they are G. Weary and J. Doucet.

All graduate student research is being supported by a National Research Council Grant and an Extra Mural Research Grant from the Department of Forestry and Rural Development. The assistance and co-operation of the latter organization in implementing this research is gratefully acknowledged.

#### Wildlife Research — Morgan Arboretum

Two projects have been in progress in the Arboretum over the last three years — the rodent damage to maple sap pipelines and a survey of the turtles in Stoneycroft pond.

Though we were well prepared to do an intensive study on the rodent damage to pipelines, the rodents refused to co-operate. Fortunately, the weather and snow conditions this year were such that we were able to predict that there would be no damage. This programme will continue next year and we are optimistic about its final outcome.

The Stoneycroft turtle population seems to have collapsed. Our estimates last year were that there were about seventy-five turtles living in the pond. This year we were only able to trap ten turtles which is about one third as many as would normally be expected. The reason for the decline, if, in fact, there has been one, might be attributed to the enlargement of the pond using explosives. Explosives used in water are known to kill fish, but turtle kills have never been reported in the literature.

#### Adult Education, Public Relations, Meetings, etc.

Centennial year brought many additional groups and visitors to Macdonald College and the Morgan Arboretum. This meant a particularly heavy schedule of tours and visits during the summer months. The following groups and individuals toured the Arboretum. The Entomological Society of Canada; The Quebec Landscape and Nurserymen's Association; The Ontario Landscape Contractors' Association; Dr. Erik Jorgensen and Dr. Leslie Laking with 12 students from the University of Toronto Landscape Architecture course; Dr. A. Lafond and 30 Forest Ecology students from the Faculty of Forestry, Laval University; Dr. Henning and eight students from the Niagara Parks Commission School of Horticulture; Mr. Gordon Mills and Mr. André Richard, Hewitt Equipment Company; Dr. Henry Bolker, P.P. R.I.C., and Dr. Nakatsuka from Japan; Mr. Ray Hallward, Royal Hamilton Botanical Gardens, Dr. Robert Morrow, Cornell University Conservation Department; M. Roger Blais, Institut National Agronomique de Paris; Mr. G. M. Wilson, Manager, University of Toronto Forest, Dorset, Ontario; Professor Kostron, University of Prague, Czechoslovakia; The Earl of Dalhousie; Dr. Jim Marvin and Mr. Fred Laing, Maple Researchers, University of Vermont; Mr. Jean



Guilbault, Chef, M. Gérard Blanchard and M. Garneau Cormier, Maple Division, Ministère de l'Agriculture et Colonisation, Québec; Dr. Martin Hubbes and Mr. Raymond d'Astous, Poplar Diseases, Department of Forestry and Rural Development, Quebec; and this May, Mr. Roger Lines of the United Kingdom Forestry Commission on a 7-month Nuffield Fellowship tour of the Commonwealth countries, to mention the more noteworthy. There have been many others who have been given tours or who have visited for information on forestry matters. Guide and Scout groups have been included in several special conservation outings, and radio and television interviews on wildlife, Christmas trees, maple sugaring and various management methods go on through the year.

#### *Woodlot Assistance — South-Western Quebec A.R.D.A.*

A report outlining the development of this programme to mid February was sent to Quebec. Since that date additional co-operators have been signed on and the total number now stands at 48 woodlot owners. The report, in part, is reproduced below:—

##### *“Number of Co-operators.*

The programme now includes forty resident and non-resident owners in Huntingdon and neighbouring Chateauguay counties as of February 16th, 1968. Files have been opened for all these owners and personal visits have been made to almost all owners who have indicated an interest in the programme. These visits are continuing. Inspections of open and wooded land are carried out in company with the owner.

##### *Management Planning.*

Basic management recommendations are made verbally to each of the owners at the time their properties are inspected. This is done when in the area so that exact field suggestions and practical recommendations can be made. At a later date these basic recommendations are drawn up, in order of priority and sent to the owners in writing to further remind them of priority action. Management plans with forest cover type maps attached are also prepared for each owner. The inspection and management recommendations are the basis for each plan. Recent cut-overs, problem areas and special interest sections of the woodlot are of primary interest during these visits, and records of production are also obtained at this time. The field visits also give us a chance to ascertain the owners' attitudes and goals of woodlot management, and permit the basic recommendations and the subsequent management plans to be dovetailed to best meet these objectives.

##### *Market Information.*

In addition to field visits and meetings with the co-operators themselves, the wood-using industries within a radius of 50 miles of the Huntingdon and Chateauguay region have all been contacted. A 25-page marketing report has been prepared from these contacts to advise woodlot owners of the markets available for wood products in the region. All co-operators have been notified that this report is available; it is mailed to them if requested. The marketing report itemizes products and prices under the following main headings:—

Marketing Suggestions  
Veneer — 1 firm



Cedar posts etc. — 5 firms  
 Pulpwood — 3 firms  
 Dimension stock — 11 firms  
 Sawlogs — 22 firms  
 Smelterwood — 2 buyers

#### Communications Methods.

Agronomes in the region have been visited on several occasions and their help obtained in more widely publicizing the assistance programme. All farm organizations in the region have been approached through their respective executives and advised of the availability of the programme. Several meetings have been held with the co-operation of the local farmers associations and the assistance programme outlined at these meetings. Advertisements have been placed in the Huntingdon Gleaner in French and English, and in La Ferme. Two articles describing the programme have been published in the Huntingdon Gleaner and the MacDonald Farm Journal in French and English. This latter article has been reprinted and widely circulated. A television and several radio broadcasts have further helped to publicize the availability of woodlot assistance in the region. A total of five memoranda advising co-operators of markets for woodlot products, current prices, meetings on maple syrup, Christmas tree production, woodlot management, and other items of current interest such as chain saw safety have been circulated to all co-operators. This periodic mailing keeps them informed and up-to-date on developments in private forestry.

#### Office Work.

Each co-operator answers a detailed questionnaire at the time of the field inspection. The information provided allows the preparation of a personalized management plan to meet his needs. Air photo coverage is obtained for each co-operator's land and enlargements aid the preparation of the plan and the drafting of a large-scale, cover type map (500 feet=1 inch). This work and record-keeping on each co-operator's performance, the revision, up-dating and follow up of the basic management recommendations takes the major amount of time per co-operator.

Records — 1st June 1966 to 15th February 1968.

	1966	1967	1968
A. No. of co-operators (cumul.)	16	32	40
B. Record of field visits	13	27	8
C. Wooded acreage added	1,637	1,446	698 <sup>1</sup>
Total acreage 3,781			

<sup>1</sup>Data incomplete on 4 co-operators.

Mr. Richard Lord (1965) estimated there is 40,000 acres of wooded land in Huntingdon county. The assistance programme now includes close to 10 per cent of that private forest land.

#### Staff.

Mr. Richard Lord, a forestry engineer was employed in this study when it commenced in June 1966. Mr. Lord resigned in March 1967 to work in Nova Scotia. Mr. Gene Goundrey, Riverfield, P.Q., a forest technician, was hired 1st June 1967. The undersigned with Mr. Goundrey's assistance has carried on the field



and office work throughout 1967. Mr. Goundrey resigned 1st February 1968 to continue his forestry education in the United States. Since that time a part-time secretary, Mrs. Lovell has been employed to help complete the office work under my supervision. In addition to this office work, 2 field visits a week are being carried out, besides the organization of meetings and other work associated with follow-up visits, contact with potential co-operators, and maintaining the current market information. A forest technician has been engaged from 2nd June 1968 to continue the overall conduct of the programme. Mr. Goundrey has returned for the summer. The importance of having a local man to work in the field is critical. His knowledge of the area and of certain local practices has been most helpful and aided the good response from woodlot owners to the programme."

### *Department and Arboretum Research Activities*

With the receipt of several grants specifically for research, and the increasing emphasis and need for more research activity, an annotated list of major projects (many unfunded) is presented for the information of the membership.

1. Studies of *Betula* sp. Cyto-genetics and taxonomy of the white barked birches of Canada. Extensive herbarium and living collection at the Morgan Arboretum (N.R.C. support).

(Man-years - 1) W. H. Brittain 1967-68 \$6,000

2. Urban Forestry Studies. The selection, use and demonstration of native shade trees for landscaping and beautification purposes (i.e. amenity). (Departmental financing)

(Man-years - 1/8) Staff

3. Woodlot Management - economic levels. Demonstration of three levels of woodlot management intended for owners of differing income levels - classed as marginal, commercial and conservation. The three methods are also being used for demonstration purposes and to obtain data regarding their viability. (Departmental financing)

(Man-years - 1/4) A. R. C. Jones - J. D. MacArthur

4. South-Western Quebec Woodlot Study - Technical assistance to owners of wooded lots. A study of the degree to which technical assistance can favourably affect returns and production from improved woodlot management. (Quebec A.R.D.A. support)

(Man-years 1/2 professional,

1 technical) A. R. C. Jones

1967-68 \$10,000

5. Management of sugar maple for sugar production. A general study with special attention to development of a young stand of sugar maple. Potentially long term, this work is now in its second year. One phase is the intensive management of sugar maple. (C.D.A. support)

(Man-years - 1/4) J. D. MacArthur

1967-68 \$3,600

6. Maple sap collection studies. Applied research involving plastic tubing systems for sap collection and featuring vacuum pumping systems. Objectives are to adopt, improve and develop most economic systems. (Q.A.R.C. support)

(Man-years - 1/4) A. R. C. Jones - J. D. MacArthur 1968-69 \$3,500

7. Reforestation. Small scale plantations of both coniferous and broad-leaved species in the Morgan Arboretum are producing interesting results. (Departmental financing)

(Man-years - 1/4) J. D. MacArthur



8. Christmas tree culture and marketing. Cultural methods such as pruning, shearing and special protection are being tested and developed with a view to optimizing returns. Our organization is co-operating in observations of various Scots pine races, and in the special grafted clone study initiated by the Petawawa Forest Experimental Station tree breeding group. (Departmental financing)

(Man-years — 1/8) J. D. MacArthur

9. Timber stand improvement. The Morgan Arboretum forest is under intensive management with regular cutting according to a management plan aimed at improvement in tree and stand quality and improved species composition. (Departmental financing with equipment grants from Terry Machinery, Chain Saw Division)

(Man-years — 1/4) Staff

10. Woodlot protection. Studies of various practices and use of materials for weed and grass control in plantation establishment, fire protection methods and water impoundment techniques (in co-operation with the Department of Agricultural Engineering). (Departmental financing)

(Man-years — 1/10) Staff

11. Multiple use. The Morgan Arboretum forest is managed intensively for wood products. It is also used intensively for outdoor recreation by the Morgan Arboretum Association membership. Records of forest management and recreational activity constitute an important source of information on multiple use. (Departmental financing)

(Man-years — 1/8) Staff

12. Community Ecology. Studies of animal activity in forest communities in 1: the Laurentians and 2) Central Newfoundland. (1. N.R.C. support, 2. Department of Forestry and Rural Development E.M.R.)

(Man-years — 1/2 professional,	1. 1967-68	\$5,000
2 - 4 technical) J. R. Bider	2. 1967-68	\$7,800

13. Effects of rodents on maple operations. Studies of rodent damage to maple sap collecting devices and methods of control and protection of such installations. (Departmental financing with equipment grants from 3M and Lamb suppliers)

(Man-years — 1/8) J. R. Bider

#### Publications

During the year, members of the Department have prepared and published the following scientific articles and papers:—

Brittain, W. H. and W. F. Grant. Observations on Canadian Birch (*Betula*) collections at the Morgan Arboretum. IV *B. caerulea-grandis* and hybrids. *The Canadian Field Naturalist*, v. 81, No. 2., 1967, pp. 116-127.

----- and W. F. Grant. Observations on Canadian Birch (*Betula*) collections at the Morgan Arboretum. V. *B. papyrifera* and *B. cordifolia* from Eastern Canada. *The Canadian Field Naturalist*, v. 81, No. 4., 1967, pp. 251-262.

Bider, J. R., P. Thibeault and R. Sarrazin. Schèmes dynamiques spatio-temporels de l'Activité de *Procyon lotos* en relation avec le comportement. *Mammalia*, v. 2, May 1968, pp. 1-30.

----- and (Pimlott, D. H., J. R. Bider and R. C. Passmore) Investigation into the decline of deer in the counties north of Montreal — 1968. (Report in French and



- English to l'Honorable C. E. Loubier, Ministre du  
Tourisme, de la Chasse et de la Pêche, Québec, 1968,  
pp.1-53.
- Jones, A. R. C. A Practical Approach to Private Forest Management  
in Canada. *Proceedings of XIVth International Union  
of Forest Research Organizations Congress at Munich*.  
Section 31, Vol. VII, 1967, pp. 281-194.
- A Visit to the Cradle of Forestry. *Macdonald Farm  
Journal*, v. 29 (12), 1967, pp. 5-7.
- A Practical Approach to Private Forestry. *Ontario  
Tree Farmer*, v. 8, no. 6. 1967, pp. 18-20, and *Forêt  
Conservation*, vol. 34, no. 3, 1968, pp. 10-12.
- Canadian Maple Research and Demonstrations. *Na-  
tional Maple Syrup Digest*. Vol. 6, no. 3, 1967, pp.  
17-18.
- Annual Report, Department of Woodlot Management,  
Macdonald College and the Morgan Arboretum As-  
sociation. 1967. pp. 1-32.
- Review. *The Forestry Chronicle*. v. 44, no. 3, 1968,  
p. 66.
- MacArthur, J. D. Morgan Arboretum — Maple Results in 1966. *National  
Maple Syrup Digest*. Vol. 6, no. 3, 1967, pp. 15-16.
- Spotlight on harvesting (C.P.P.A. Woodlands Section  
Summer Logging Conference) *Woodlands Review*.  
July 1967, pp. 304-309.
- CANFOR logging — from the mountains to the sea.  
*Woodlands Review*. October 1967, pp. 420-427.
- Not by forestry alone (CIF-SAF Joint Conference).  
*Woodlands Review*. November 1967, pp. 464-466.
- Effects of new influences on woods operations (CIF-  
SAF Joint Conference). *Woodlands Review*. Decem-  
ber 1967, pp. 504-505.
- Container planting with guns, bullets and lazysusans.  
*Pulp and Paper Magazine of Canada*, v. 69, no. 1,  
1968, pp. 91-93.
- The use of chemical herbicides in forestry, to-day and  
in the future. *Pulp and Paper Magazine of Canada*,  
v. 69, no. 6, pp. 98-101.
- Review. *Pulp and Paper Magazine of Canada*. v. 69,  
no. 7, 1968, p. 19.

Most of the above articles in reprint form are available on request  
from the Department office.

#### Future Plans

Several technical meetings, in which our Department is involved, are  
scheduled for this coming summer, and considerable organizational  
work has already been carried out in preparation for these sessions.

On August 1st and 2nd the New York State Maple Tour, an annual  
event involving approximately 200 maple producers and technicians,  
will be visiting some of the leading maple producers in Huntingdon  
county, and the undersigned has been asked to present a report on the  
status of the maple industry in the Province of Quebec. The tour is or-  
ganized by Professor Fred Winch, Extension Forester, Cornell Uni-  
versity, and provides an excellent opportunity for the exchange of ideas  
on new developments in the industry.



The Canadian Forest Tree Breeders' and the Northeastern Forest Tree Improvement Committees are holding their joint annual meeting at Macdonald College on August 7th to 10th. Two days of technical papers are planned, with a spruce symposium holding the limelight. A field trip for the two hundred forest scientists and geneticists attending will be held in the Morgan Arboretum. This field trip will concentrate on the following areas:— the collection of North American pine species; grafted Scots pine clones for Christmas trees; the mixed 1952 planting of European larch and Norway spruce; the maple collection; and the Canada-wide collection of white barked birches and the Canada Trail.

An International Poplar Symposium is being terminated in the Montreal area in the latter part of September. This Symposium includes forest scientists from all parts of the world interested in poplar culture. The meeting commences in Vancouver and travels eastward, visiting various plantations and experimental stations doing research work on poplar breeding and provenance. Following the Montreal meetings, a field trip is planned to visit the various poplar plantations in the Morgan Arboretum.

The Department has been invited to present a paper on the Macdonald College maple research programme at the Seventh (triennial) Conference on Maple Products at Philadelphia in October. This meeting, under the auspices of the United States Department of Agriculture, Agricultural Research Service, is a gathering of the maple producers and researchers of North America.

The McGill Faculty of Graduate Studies and Research has recently accepted an application from Mr. John Ambrose to carry on M.Sc. studies in Woodlot Management. Mr. Ambrose, a forestry graduate from the University of Toronto, wishes to conduct special studies on reforestation, and we are looking forward to having him with us. There are many projects that have been underway for some time in the Arboretum and elsewhere that require full time study, and the development of a graduate programme should greatly facilitate the progress and reporting of this important work.

This annual report has been a team effort and the contribution of all members of the staff in its compilation is hereby gratefully acknowledged.  
31 May, 1968.

A. R. C. Jones  
Chairman  
Department of Woodlot Management

#### *Form of bequest*

The Directors wish to remind friends of the Morgan Arboretum Association that the financing of the Association's activities is dependent on their generosity to provide funds to maintain and expand conservation in Canada.

It is suggested to those in a position to do so, the addition to their will of a particular legacy in the following form:—

"I bequeath to the Morgan Arboretum Association, Macdonald College, as a particular legacy, and free from all succession and death duties of any kind, the sum of \$....."

Inquiries concerning bequests, other gifts to the Association, or additional information, should be addressed to:

The Secretary-Treasurer,  
Morgan Arboretum Association,  
Macdonald College, P.Q.



DEPARTMENT OF WOODLOT MANAGEMENT and  
MORGAN ARBORETUM and WOODLAND DEVELOPMENT  
ASSOCIATION

Interim Statement of Income and Expenditure  
*June 1, 1967 to May 31, 1968*

*Income*

Contribution from members (including gate receipts)	\$38,297.00 <sup>a</sup> )
Income from sales	17,340.00
Interest on Reserve	2,340.00
McGill Contribution	15,000.00
	<hr/> \$72,977.00 <hr/>

*Expenditure*

Ordinary	\$17,158.00
Non-recurring	4,150.00
Fixed	960.00
Salaries & wages (including employee benefits)	63,290.00
	<hr/> \$85,558.00 <hr/>

*Estimated Income and Expenditure 1968-69*

Contribution from members	\$40,000.00
Income from sales (as per Budget)	15,000.00
Interest on Reserve	2,000.00
McGill Contribution	20,000.00
	<hr/> \$77,000.00 <hr/>

*Estimated Expenditure*

Budget for 1968-69	<hr/> \$95,395.00 <hr/>
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<sup>a</sup>) Including \$10,000. transferred from McGill Fund Council

W. C. Shipley,  
Secretary-Treasurer.

May 31, 1968.